

Carol

You raised in your e-mail some new questions as well as address an old one about the PM10 emission inventory Utah is preparing for the attainment demonstration. Here is the response to your questions prepared after doing some checking of EPA guidance and talking with others in the air group here at the office and with headquarters.

**Question #1 Do we use the 1996 emission factors that are in our data base or do we have to update the factors (based on the factors appearing in the latest version of AP-42) as we check the emissions?**

Section 172 of the Clean Air Act states that emission inventories shall include a comprehensive, accurate, current inventory of actual emissions. EPA interprets this to mean that the latest version of emission factors must be used when preparing or updating emission inventories.

Air Chief Version 7 (November 1999) provides the most recent AP-42 emission factors. A review of the emission factors shows that several categories of emission factors have been updated since 1996. The State of Utah must review these categories and apply the factors in updating the emission inventory. A list of the updated categories appears below. Many of the categories do not appear to be relevant to Utah's inventory. Therefore, we anticipate that the work in updating the inventory should be small. The relevant categories appear in bold.

<b>Bituminous Coal Comb.</b> 9/98	Fuel Oil Comb. 9/98	<b>Natural Gas Comb.</b> 3/98
Wood Waste Comb. In Boilers 2/99	Lignite Combustion 9/98	<b>Landfills</b> 11/98
<b>Waste Water Collection</b> 2/98	<b>Organic Liquid Storage Tanks</b> 9/97	Nitric Acid 2/98
Natural and Processed Cheese 8/97	Grain Elevators and Processes 6/98	Sugar Processing 6/97
Distilled Spirits 4/97	Leather Tanning 7/97	Plywood and Fiberboard Processing 97 & 98

Wood Preserving 9/99	Bricks and Related Clay Products 8/97	Western Surface Coal Mining 10/98
Frit Manufacturing 6/97	Lime Manufacturing 2/98	Taconite Ore Processing 2/97
Primary Lead Smelting 10/98	<b>Paved Roads 10/97</b>	<b>Unpaved Roads 9/98</b>
<b>Abrasive Blasting 10/97</b>	Greenhouse Gases 2/98	

EPA Region VIII's assumption here is that the State used emission factors appearing in 1996 and earlier editions of AP-42.

You said that your inventories do not automatically update for new emission factors. Updating emission factors may only require that the new factor be placed in the spreadsheet and having the spreadsheet recalculate a new emission total. Please advise us if there is additional work to do and we can make suggestions to help the process of revising the emission inventory.

Updating the emission inventory means that both the base year and the attainment year emission inventories require the use of the new emission factors. Updating both inventories is necessary to keep track of changes in the emission inventory as explained in your telephone conversation with Jeff Houk, EPA Region VIII. For example, reductions between the base year and attainment year inventory should be attributed to control strategies rather than an artifact of changes in the emission factor. Updating both inventories eliminates this possibility.

**Question #2 The SMOKE model will temporally allocate the emissions. Therefore, we are, in most cases, submitting annual emissions to SMOKE and not calculating emissions for the specific episode days. This is different than what we have done for other SIPs. Please let us know if this will be a problem.**

The SMOKE model uses national default values for specific sources, i.e. refineries, power plants, etc., convert annual emissions into daily emissions for use in episodic modeling. Kevin Golden and I have discussed the use of the SMOKE model for Utah's PM10 episodic modeling. We agree that it would make for a more accurate emission inventory if the State would develop a specific episodic 24 hour emission inventory for major stationary sources of PM10, SO<sub>x</sub> and NO<sub>x</sub> rather than rely on default values. It will eliminate errors introduced by the use of national factors and better help the State to achieve attainment. SMOKE appears to be a viable option for mobile and area source temporal allocations.

**Question #3 We only plan to apply rule effectiveness to the point sources we are quality**

**checking. (This is what we have done in other inventories) Please let us know if this will be a problem.**

In the past, Region VIII has accepted an 80% rule effectiveness measure as a default value applied to all sources in which rule effectiveness is appropriate. Guidance prepared in the Emission Inventory Improvement Program, titled *Emission Projections - December 1999*, encourages the States to give thought to how rule effectiveness should be applied. It points out that it should be tracked at the source category level.

Apply rule effectiveness to the sources on which quality checks are performed. EPA Region VIII received your e-mail of the sources in which quality checks will be performed. Comments on the list will follow. The percent rule effectiveness is to be determined from your review of its effectiveness and the source's compliance. The 80% rule effectiveness measure may be applied to those sources that were not checked but where rule effectiveness is applied on the source.

The State must document those sources that had rule effectiveness applied. Later changes to the emission inventory can take these percentages into account.

### **Non-Road Emissions**

The following comments are provided after review of the non-road emission section in regards to the March 6, 2000 Base Year emission inventory preparation plan prepared by the Air Quality Bureau. The comments were e-mailed to Steve Parkin earlier and are included here for the purpose of consolidating EPA's comments regarding Utah's effort at preparing the PM10 emission inventory.

EPA Region VIII has since received an updated emission inventory protocol dated May 31, 2000. The document has not yet been reviewed to determine if the comments presented here on non-road emissions are incorporated in this latest version.

Emission estimates from non-road sources are just that, estimates. EPA has software and other documents to assist Utah in trying to assess as accurate as possible emissions from these source categories. Usually in an ozone or carbon monoxide (CO) SIP revision, non-road emissions are a sizable contribution to the overall inventory. There are a series of source categories that must be accounted for in an attainment, modeling, or maintenance demonstration, but remain largely uncontrolled (from the State's perspective) except for Federal requirements on the manufacturers.

1. Page 46, 47, section 6.1.1 "Aircraft": The last paragraph, last sentence on page 46 indicates that the FAAED program would be used by UDAQ "The software then calculated emissions of PM10, VOC, SOx, and NOx for each type of aircraft." I went in and reviewed FAED2.1

and its output emission files. From a review of the output from FAAED2.1, it calculates CO, NOx, HC (total hydrocarbons, not just VOCs), SOx, and a smoke number. No PM or PM10 emission numbers were generated. Also, in looking at EPA-Volume IV, there is very limited (one or two entries) for PM emission factors for commercial aircraft. There are more PM emission factors for military engines, but again - not many. Please document what exactly the State will be using for "PM10" emission factors for aircraft as it does not appear to be readily available from our documents or the FAA program.

2. Page 47, 48, section 6.1.1 "Aircraft", "b. Hill Air Force Base": At the top of page 48 it's stated "Actual 1994 flight statistics were received from Hill AFB and utilized in these calculations." Actual data from 1996 should now be available and be used for this 1996 inventory. Also in regards to pages 47 and 48; there was no VOC and PM10 (or PM) emission factors or output information for military aircraft in the FAEED2.1 program. The same issue as for commercial aircraft, as to what factors are being used by the State, needs to be resolved for this category (or come to an agreement between EPA and UDAQ).
3. Page 49, 50, section 6.1.2. "Railroad Locomotives": The State's referenced tables from EPA-Non-Road Study for locomotive emission factors are PM emission factors; not specifically PM10 emission factors. As with the aircraft emissions, the State and EPA need to come to an agreement on what factors should be used.
4. Pages 50, 51, section 6.1.3. "Miscellaneous Non-Road Equipment": The State's approach to develop this portion of the non-road inventory appears to be similar to that which they used for the 1997 SLDC ozone maintenance plan. States generally have two methods to develop this portion of a non-road inventory; use and modify as appropriate the non-road emission data developed by us in our EPA-Non-Road Study (from 1991), or use the newer Non-Road (OTAQ) Emissions Model. EPA's Non-Road model is still in a "draft" form, but OTAQ has stated it is suitable for SIP inventory work and OTAQ hopes to make it "final" this summer. The State of Colorado, for example, has shifted over to using this model for preparing all their non-road inventories for CO. EPA encourages UDAQ to consider doing the same for this PM10 inventory work and other future inventory efforts as this is the Agency's direction. Perhaps UDAQ could talk to CDPHE and EPA about the merits of this.

However, should UDAQ wish to continue using the EPA-Non-Road Study they can, but EPA would need to see the same level of effort that went into the preparation of the non-road inventories in section 3.2 of UDAQ's Utah O3-Volume 6 of the 1997 ozone maintenance plan. Also, EPA's Non-Road Study does not have PM emission factors for all the categories (fortunately, many are covered), and again - these are PM emission factors, not PM10. EPA needs to come to an agreement with UDAQ on the use of these PM emission factors and have it documented in their TSD.

Guidance used in preparing the comments on non-road emissions are as follows:

- a.) FAEED2.1 - The FAA engine database program for calculating criteria pollutant emissions from aircraft.
- b.) "Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources, 1992", EPA-450/4-81-026d (Revised). Hereafter referred to as "EPA-Volume IV".
- c.) "Non-road Engine and Vehicle Emission Study", EPA, OAR (ANR-443), 21A-2001, November, 1991. Hereafter referred to as "EPA-Non-road Study".
- d.) Volume 6, Section 3.2 - "Non-Road Mobile Class", Technical Support Document, Salt Lake and Davis Counties Ozone Maintenance Plan, February, 1997. Hereafter referred to as "Utah O3- Volume 6".